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ABSTRACT

Mothers' ability to decode the emotional expressions of their male and female children was compared to the decoding ability of non-mothers. Happiness, sadness, fear and anger were induced in children in situations that varied in terms of spontaneous and role-played encoding modes. It was hypothesized that mothers would be more accurate decoders of their children than the non-mothers. It was also expected that emotional expressions of female children would be decoded more easily than those of male children, and that positive affect would be more easily decoded than negative affect. Twenty-four children (12 male and 12 female), their mothers, and 24 matched non-mothers were recruited for the study. Children viewed slides and listened to corresponding narratives depicting scenarios such as a birthday party, a lost dog, and a false accusation. Spontaneous and role-playing behaviors were then observed by the mothers and non-mothers. It was found that the pattern of decoding accuracy differed for mothers and non-mothers. Mothers were able to accurately decode expressions of happiness, but had relative difficulty in decoding expressions of sadness, fear and anger. The pattern of decoding accuracy for non-mothers was such that no affect was decoded at greater than chance levels. Decoding accuracy also differed according to the sex of the encoding child. (Author/RH)

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Decoding Children's Expressions of Affect

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Abstract

Mothers' ability to decode their children's nonverbal expressions of four affects (happiness, sadness, fear, and anger) was contrasted with the decoding ability of a matched group of nonmothers. The pattern of decoding accuracy differed for mothers and nonmothers. Mothers were accurately able to decode expressions of happiness, but had relative difficulty with decoding expressions of sadness, fear, and anger; in fact, anger was decoded at levels worse than chance expectation. The pattern of decoding accuracy for nonmothers was such that no affect was decoded at greater than chance levels. Decoding accuracy also differed according to sex of the encoding child.

Decoding Children's Expressions of Affect

Because parental empathy has been linked to emotional well-being in children (Carek, 1972; Ornstein, 1976; Saarni, 1978), the accurate decoding of children's emotions would seem to be critical for parents. One important cue to a child's emotional state is his or her nonverbal behavior. Indeed, nonverbal behavior may be the primary channel of information about the child's emotions, especially for younger children whose verbal abilities are not yet greatly developed and particularly for negative emotions which seem to be subject to greater inhibition of verbal expression due to socialization (Mehrahian, 1972). Although some prior research has focused on various aspects of the nonverbal communication process between parents and children, little is known regarding the ability of parents to decode expressions of specific emotions. The present study addresses this question by examining how mothers differ from nonmothers in the decoding of specific affects in children.

Several studies have examined children's abilities to encode various emotional expressions. Odom and Lemond (1972) found that the least accurately produced expressions were those judged most socially undesirable (with the exception of anger). In a role-playing paradigm, Buck (1975) found children better able to encode the affect happy than fear and anger. In a review paper, Mayo and La France (1978) report developmental differences in encoding ability. Happy and sad seemed to be within the repertoire of all age groups studied, while expressions of anger and surprise showed some improvement up to the age of ten or eleven. Expressions of fear, however, seemed difficult even for the oldest children studied.

These studies focused only on the encoding aspect of the nonverbal communication process. We do not know, therefore, the effects of decoders' abilities

(particularly parents decoding their own children compared to nonparent's). In addition, these studies were based on role-played encoding; the children's facial expressions were not spontaneous. Decoders' abilities may be different in situations in which affect is produced more spontaneously.

Because parents have a greater history of interactional experience with their children than nonparents, both social skills theory (Argyle & Kendon, 1967) and learning theory (Staats, 1975) would predict that parents and nonparents should differ in their accuracy in decoding the nonverbal expressions of the parents' children. Yet, the few studies in which parents are directly compared with nonparents in decoding children's expressions provide mixed support. Hall, Rosenthal, Archer, DiMatteo, and Rogers (1974), employing an audio-visual test of nonverbal decoding ability (PONS), found that mothers were more accurate than nonmothers in decoding expressions of children, although the children were unrelated to the parent subjects. However, in a later study employing adult relatives and friends of child subjects compared to adult "strangers", relatives only did better in decoding vocal expressions and not when encoding other modes of nonverbal behavior.

Buck (1975, 1977) has examined communication accuracy between mothers and preschool children in a spontaneous encoding condition employing a slide-viewing paradigm. The children watched a series of emotionally-loaded slides, while mothers watching the children on television monitors attempted to categorize the type of slide the child saw as well as judge the degree of pleasantness-unpleasantness of the child's experience. A comparison group of student decoders was also employed. Buck found significant communication accuracy with both mothers and controls and marked individual differences across sender-observer pairs, with encoder characteristics seeming to determine communication accuracy. A trend toward greater communication accuracy for girls in encoding ability and decreased accuracy for

boys with increasing age was also found. Results were consistent with the hypothesis that sex differences in nonverbal expressiveness develop as a result of differential socialization practices. The drawback of this and other work, however, is that the stimuli used to elicit the nonverbal responses were not specific to particular emotional states, but rather involved general affective dimensions such as pleasantness-unpleasantness.

In seeking to extend the findings of previous studies, the present research compares mothers to nonmothers in their ability to decode the nonverbal responses of their own male and female children to four specific affect-inducing situations (happiness, sadness, fear, and anger) in both spontaneous and role-played encoding modes. Because parents have greater experience in communicating with their own children, it was hypothesized that the mothers would be more accurate decoders of their children than the nonmothers. It was also expected that, on the basis of prior research, female children would be decoded more easily than male children, and that positive affect would be more easily decoded than negative affect.

Method

Subjects. Twenty-four children (twelve male, twelve female) and their mothers were recruited by letters sent to local nursery schools and kindergartens. Ages of the children ranged from 3 years, 11 months to 6 years, 6 months. Children served as encoders of nonverbal affective messages, while mothers served as the primary decoders, attempting to decode the child's nonverbal affect message. Twenty-four women, who were not parents, were matched with the children's mothers and served as nonparent control receivers. The women were matched on the basis of age, socioeconomic status, and race.

Procedure

The procedure used in this study to measure the nonverbal communication of affect is based upon the sender-receiver paradigm described in Buck (1975, 1977). Communication accuracy was examined in two conditions: spontaneous encoding and role-played encoding.

Senders. In the spontaneous encoding condition, a task originally devised as a measure of empathy by Feshbach and Roe (1968) was used as an affect induction. The children, serving as senders, watched a series of slides that corresponded to a set of narratives recorded on tape and played for them by a female experimenter. Each child, in an individual session, heard and saw four types of narrative-slide sequences. Characters in each of the sequences were described as experiencing one of four affective states: happiness, sadness, fear, or anger. Each sequence consisted of three slides describing a scenario, and there were two scenarios for each of the four affects. The slides were drawn so as to limit extraneous stimuli and to provide direct facial cues as to the affect experienced by the characters. Two sets of scenarios were prepared: one with male characters and the other with female characters. The sets were identical in all other aspects. Male children were shown male characters and female children were shown female characters.

The specific scenarios for each of the affective categories were: (1) happiness (birthday party, winning a television contest); (2) sadness (a lost dog, social rejection); (3) fear (a lost child, a frightening dog); and (4) anger (a toy snatcher, a false accusation). The narratives associated with each slide sequence were matched for number of words. An example of the narratives (a male, sadness sequence) is given below:

Slide I - Here is a boy and his dog. This boy goes everywhere with his dog, but sometimes the dog tries to run away.

Slide II - Here the dog is running away again.

Slide III - This time the boy cannot find him and it looks like he may be gone and lost forever.

After each sequence, the child was asked how he or she felt. If it appeared the child did not understand the question, he or she was asked how the child in the story felt. The child's response was recorded and used as a check of congruity between affective sequences shown and the child's description of his or her experience.

The two scenarios for each of the affects were presented sequentially so as to increase the impact of the affective content. Order of presentation of the affective sequences, however, was randomized across subjects. A brief filler task consisting of sorting small objects by color and size was used between presentation of affective categories to minimize carryover from one category to the next. A total of eight affective sequences were presented to each child. All children were secretly videotaped via a hidden camera, while observing the scenario.

Following presentation of affective sequences, the experimenter asked the children to role-play each of the four affects by imagining that they were the central character in four of the narratives they had just heard (one for each of the affects happiness, sadness, fear, and anger). Again, the children's expressions were secretly videotaped via hidden camera.

Receivers. Following procedures outlined in Buck (1975, 1977), the child's spontaneous facial expressions while listening to the entire narrative were televised, without sound, to a receiver. The receiver was initially the child's mother. Later a matched nonmother receiver viewed the child via videotape. The receivers were told that the children would be seeing slides and listening to

stories about children who were feeling happy, sad, afraid, and angry, and that they would have to use the child's facial expressions alone to make judgements about each of the sequences the child would see. After the child saw each sequence, the receiver was given a prepared rating form and asked to attempt to identify the specific type of narrative-slide sequence shown to the child. In this manner, a categorization measure of nonverbal communication of affect accuracy was obtained (percent correct for narrative-slide sequences shown).

At the conclusion of all the affective sequences, the receiver was told that the child was going to use facial expressions to role-play different emotions. She was given a prepared rating form prior to each televised segment and asked to indicate which of the affects (happiness, sadness, fear, or anger) was being role-played in each segment.

Results

Separate analyses were conducted for the spontaneous encoding and role-played encoding conditions.

Spontaneous Encoding

The percentage of correct judgements in each affective category across sender-observer pairs was determined. A 2 (mothers versus nonmothers) x 2 (sex of encoder) x 4 (type of affect) mixed design analysis of variance was then employed, with type of affect as the within subjects factor and the other two factors between subjects. Because the scores were percentages, an arc sine transformation (following Myers, 1966) was employed to produce homogeneity of variance for statistical tests. (However, all means presented in this paper are raw scores.)

Results indicated that accuracy in decoding varied widely according to the

type of affect encoded, $F(3,132)=10.60$, $p < .0001$. Table 1 gives mean accuracy scores by affective category. As expected, the positive affect of happiness was

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Insert Table 1 about here

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decoded with accuracy above chance expectation and significantly better than any other affect, $p < .05$, according to post hoc Duncan tests (Duncan, 1955). While the decoding of sadness and fear failed to differ signficantly from what would be expected by chance alone (an observer should identify 25 percent of affective sequences correctly by chance alone), the decoding of the affect anger fell significantly below chance expectation, $p < .01$.

The general differences in decoding ability according to type of affect were moderated by the findings of significant interactions between type of affect and type of observer, $F(3,132)=3.94$, $p < .01$, and type of affect and sex of encoder, $F(3,132)=2.95$, $p < .05$. Examination of the means involved in the affect x observer interaction gives partial confirmation to the hypothesis that mothers would be better decoders of their own children than matched controls (see Table 1). As expected, mothers were significantly better than chance at decoding their childrens' expressions of happiness, $M=.56$, $p < .05$. Contrary to expectation, however, mothers' performance was significantly below chance, $M=.04$, $p < .01$, in decoding expressions of anger. For nonmothers, decoding ability did not differ significantly from chance performance for any affect. Interestingly, although nonmothers' decoding of anger was not better than what would be expected by chance alone, the nonmothers' decoding was significantly better than mothers' for that particular affect, $p < .05$. Apparently, then, mothers are both more sensitive at decoding positive affect (happiness) in their own children and less sensitive at decoding anger when compared to nonmothers.

With regard to differences in decoding ability based on differences in sex of the encoding child, examination of the means involved in the type of affect x sex of encoder interaction gives some support to the predictions (see Table 1). When male children were encoding, happiness was decoded at levels significantly above chance, $\underline{M}$=.52, $p < .01$. Receivers' decoding ability did not differ from chance for any other affect. In contrast, when female children were encoding, the only significant difference from chance performance was for anger ($\underline{M}$=.15), which was decoded at levels significantly below what would be expected by chance alone, $p < .05$.

In summary, the results obtained for spontaneous encoding indicate that, as predicted, affects were decoded with differential success. Happiness was the only affect decoded significantly better than chance, while anger was decoded at levels significantly worse than chance. While mothers, as a group, were not uniformly better than nonmothers in decoding their children's expressions, the pattern of decoding accuracy was different for mothers and a matched control group of nonmothers. Mothers were found to be significantly more accurate in decoding happiness but significantly less accurate in decoding anger, while nonmothers were not able to accurately decode any affect at better than chance levels. Sex of encoder also seems to affect observers' accuracy, but in an unexpected fashion. Male encoders were decoded better than females when encoding happiness. Surprisingly, rather than being decoded with great accuracy, female encoders were actually decoded at levels no better than chance for any affect and, in fact, were decoded at levels worse than chance for the affect anger.

Role-played Encoding

A 2 (mothers versus nonmothers) x 2 (sex of encoder) x 4 (type of affect) mixed design analysis of variance was employed to examine the results of the

role-played encoding mode. Results showed a significant effect only for type of affect, $F(3,120)=7.23$, $p < .0001$. (Table 2 gives the mean accuracy score

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Insert Table 2 about here

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for each affective category.) Both happiness ($p < .01$) and anger ($p < .05$) were decoded at levels significantly better than chance. In addition, sadness was decoded at better than chance levels approaching significance ($p < .06$).

As in the spontaneous encoding condition, happiness, when role-played, was most successfully decoded. Differing from results in spontaneous encoding, however, role-played anger was decoded with success at better than chance levels. In fact, only expressions of fear could not be decoded at levels significantly greater than chance expectation. Thus, consistent with prior research, role-played encoding was generally more accurately decoded than spontaneous decoding.

Discussion

Each of the three experimental hypotheses received at least partial confirmation from the data analysis. Differential communication of affect did occur. Consistent with previous research, happiness was decoded best (Buck, 1975, 1977; Odom and Lemond, 1972; Mayo and LaFrance, 1978). The unexpected finding of no better than chance decoding for sadness and fear and worse than chance decoding for anger in the spontaneous encoding condition can be explained in several ways. First, it is possible that the affect induction may have been particularly weak in eliciting these negative affects, reflecting the relatively low limits of affective experience to which experimental subjects can be exposed. It is also possible that the sequences expected to result in the decoding of

expressions of anger may, in fact, have resulted in the encoding of other expressions, particularly sadness (an analysis of errors made in decoding anger sequences showed that most often sadness was attributed to the anger sequences).

Our preferred explanation for these findings is in terms of the differential socialization of negative affects in the children's acquisition of display rules, defined as socially learned prescribed procedures for managing affect displays in various social settings (Ekman and Friesen, 1969). In the spontaneous encoding condition, it is possible that children of this age group have already learned that displaying negative affect nonverbally is not encouraged by adults, and thus they may have been inhibited in the presence of the experimenter. This explanation is supported by the findings in the role-playing condition of the study. Given "permission" and encouragement to produce nonverbal expressions of these negative affects, the children were decoded with reasonable accuracy for all affects except fear. This is consistent with the literature cited by Mayo and LaFrance (1978) that shows that expressions of fear were not produced reliably even by older children.

Perhaps the major finding of interest in the present study concerns the results that the pattern of affective decoding accuracy in the spontaneous encoding condition was affected not only by type of affect but, more importantly, by whether the decoder was a mother or a nonmother. Again, given the social history that parents and children share, we would have expected mothers in the study to be uniformly more accurate in decoding their children's expressions. However, the results showed that mothers were more sensitive than nonmothers to the children's expressions of positive affect (as expected) but were particularly insensitive to expressions of anger. We might speculate that these parental deficits may result from the inability to perceive expressions in one's own child which could disconfirm parental expectations and desires for child

satisfaction and emotional comfort. Put another way, it is possible that parental defenses are invoked because parents, with their unique investment in, and identification with, the emotional satisfaction of their children, have difficulty in observing nonverbal expressions which would disconfirm such satisfaction. Still, these are mere speculations; our data do not allow us to identify the precise locus of causality.

The pattern of decoding accuracy for the four affects studied also was moderated by the sex of the encoding child. Previous research has either found no such differences (Krauss and Morency, 1979) or evidence suggestive of sex differences in favor of boys being less expressive than girls, particularly as age increases (Buck, 1977), although expressions of particular types of affect were not studied.

The present research found that boys were decoded with significant accuracy only for the affect happiness; girls were not decoded with significant accuracy for any affect. For boys, then, it may be that the display rules governing nonverbal expression of affect do not "require" concealing expressions of positive affect. For girls, however, the affect of anger was actually decoded at levels significantly worse than chance. The findings for girls can be viewed as surprising, since previous research had suggested more successful decoding for girls and since females traditionally seem to be more encouraged in expressing affect than males in Western cultures. Role-playing results produced no sex differences, so apparently girls are as capable as boys in producing expressions of affect.

The literature on the differential socialization of girls in our culture would seem to best explain these findings. Maccoby and Jacklin (1974) report a decreased frequency for preschool girls, compared to boys, in expressing anger and an increased tendency to respond to frustrating situations with

expressions of sadness. Perhaps expressions of anger for girls are more likely to be seen as inappropriate, reflecting the operation of socialized display rules inhibiting expressions of negative affect. Or perhaps the lowered decoding accuracy for girls reflects the inability of our female decoders to recognize such expressions in young girls under subtle encoding conditions.

Finally, the results in the role-playing condition are consistent with previous research, except for the finding of relative accuracy in decoding anger which differs with Buck's (1975) finding. Perhaps the difference lies in the means of eliciting the role-playing. Buck simply asked the child to show an expression of anger. Here the child was given a more specific context (a character in a situation to identify with), and this may have led to increased encoding accuracy.

The present research thus provides some support for the hypothesis that socialized display rules inhibit the expression of negative affect, particularly anger, and more particularly for young girls. Consistent with this interpretation, it seems that parental defenses also may account for decreased accuracy in communicating nonverbal expressions of negative affect. Still, we cannot be sure whether the locus for the differences found resides in the children's encoding or the adults' decoding (or both).

Although our results are suggestive regarding parents' decoding abilities, it should be reiterated that only mothers were studied. The inclusion of fathers in future research is necessary for a more complete understanding of the parenting contribution to the nonverbal communication of affect. A test of parents' abilities with their own as well as other children would be necessary for sorting out the effects of parental status per se in decoding ability.

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Table 1

Mean Accuracy Scores for Decoding Affective Catetories:

Spontaneous Encoding

	Happiness	Sadness	Fear	Anger
Collapsed	.50*	.37	.35	.16**
Mothers vs. Nonmothers				
Mothers	.56*	.44	.38	.04**
Nonmothers	.44	.29	.33	.27
Sex of encoder				
Male	.5[illegible]*	.44	.25	.17
Female	.48	.29	.46	.15

*Differs from chance expectation, $p < .05$

**Differs from chance expectation, $p < .01$

Table 2

Mean Accuracy Scores for Decoding Affective Categories:

Role-played Encoding

Happiness	.84***
Sadness	.52*
Fear	.41
Anger	.57**

*Differs from chance expectation, $p < .06$

**Differs from chance expectation, $p < .05$

***Differs from chance expectation, $p < .01$